

Evening. I found him with distressing hiccough; pulse 96; tongue moist and clean; abdomen tympanitic, but without tenderness; mind somewhat disturbed. His nurses had again neglected him, and that seemed to increase his fretfulness and irritability. His bowels had not been moved since the operation (then forty-eight hours), and he told me he had taken an injection a little while before, but it had passed without any other effect. I gave him a full anodyne, applied a warm emollient cataplasm over the abdomen, again enjoined the support his anæmic condition so strongly demanded, and ordered ol. ricini, ℥j, to be given at daybreak in the morning.

Wednesday, 16th. At 10 A. M. I found him without hiccough; his abdomen much softer; a little tenderness at the edge of the wound, but none elsewhere; pulse 96; skin comfortable; tongue disposed to become dry, but clean; more anxiety than I liked, but, upon the whole, as well as the night before. The oil had been administered but a short time before my visit, instead of at daybreak, and, of course, had not yet operated. Ordered camphor julep, in case of return of hiccough.

Soon after I left him, he became worse; the hiccough returned, and he sank and died at about 6 or 7 P. M., three days after the operation. With great difficulty, I succeeded in getting a hurried autopsy, twenty hours after death. Drs. Mott, Gray, and Hitchcock were present.

There had been sufficient peritonitis to produce adhesion of that organ to the tissues in relation to it, but without injection of its vessels, deposit of fibrin, or effusion of serum. The ligature was found embracing the internal iliac an inch below the bifurcation, and a firm coagulum already deposited above the point of ligation.

This man was thirty-six years of age, had lived an intemperate and irregular life, but, at the time his injury was received, seemed to be free from disease.

I cannot close this communication, without recording my deep sense of the able and intelligent assistance rendered me in both operations by my friends, Bertody and Valentine Mott, Jr. I fully believe that, with proper and assiduous care on the part of the nurses, the termination of this case would have been different.

SAN FRANCISCO, CAL., January 11, 1854.

ART. V.—*On the Fevers of Syria.* By JOHN WORTABET, M. D.

A native Syrian physician.

MEDICINE is an eclectic science. It is only by the accumulated observation of sagacious minds, often following distinct and sometimes opposite theories and modes of treatment, that this science has become what it is at

present, and by which it is still to improve. Nor is this proposition true only of our own times; the Aphorisms of Hippocrates, the most ancient treatise on medicine, are considerably indebted to prior observation and experience; and the Canon of Avicenna is well known to be a digest of the labours of others.

I early in my career aimed to follow this principle, and consequently have been closely attentive to the practice of educated physicians of various schools, with whom it has been my lot to meet by the bedside and in the social circle, where the dogmas of our respective text-books were freely discussed, theoretically and practically. I have also carefully observed that of my brother native physicians, who are generally either followers of the old humoral theory, or are totally ignorant of books and theories, and trust for success to their own sagacity and experience. The conviction that the experience of the latter, at least in the fevers of this country, is worth something, induced me to observe their practice, and watch its results; but especially did I turn my attention to those general principles which prevailed among them, and which experience seemed to have taught them individually.

A diligent study of the morbid phenomena which our fevers exhibit, and of the result of the remedial agents which are recommended by the best English and American authorities, soon convinced me that the principle I followed was the right one. It seems from the account of these books that the common continued fever of this country is considerably different in its pathology from that of Great Britain and of the United States; and, as such, requires a modified treatment. I feel confident that I am supported in this opinion by every intelligent physician, English and American, who has had the necessary opportunities for judging in this matter. The facts, which will be presently stated, will be sufficient, I trust, to lead my readers to the same results which have been formed in my mind.

I have classified our fevers under three forms only, intermittent, bilious remittent, and synochal fevers; with what propriety, the sequel will show.

I. *Intermittent Fever*.—This disease presents two varieties, the *simple* and the *malignant*. And, although this last variety is mentioned by very few authors, yet its symptoms, prognosis, and treatment are, in some respects, so distinct from the other, that it demands a separate and full consideration. There is another still, which is included by many authors, under this head, namely, the *masked*; but the first two only will fall under our present consideration.

a. *Simple Intermittent Fever*.—This is one of the most frequent diseases of this country. Very few, if any, either natives or foreigners, escape its attacks. We have not kept statistical tables of the almost numberless cases which we have seen; but our impression is that the tertian type is the most frequent; quotidiens come next, and quartans, though very usual, are less prevalent. This order of predominance, however, is not very decided. In old cases, they

often run into each other. Quotidians may become tertians, and tertians quartans; and all these may run into the remittent and then into the continued types of fever. It prevails mostly during the summer and autumn.

Symptoms.—The symptoms of intermittent fever are so much the same all over the world, that it will be needless to describe them particularly. Before the chill commences there is a general lassitude of body and mind, indicated by yawning, stretching, and entire aversion to corporeal or mental efforts. This is succeeded by a well-marked chill, which, in the first few attacks, is long protracted, and quite severe; but in old cases becomes much shorter and lighter. The hot stage is ushered in by occasional flushes of heat along the course of the spine, which follow each other, more and more rapidly, until the whole body is enveloped in one continuous flash of burning fever. Contrary to expectation, the symptoms of this stage do not seem, from the accounts in medical books, to be severer in this country than in colder or more temperate climates; the flushed face, red tongue, thirst, full and frequent pulse, preternatural heat, high coloured and scanty urine, seem to acquire no intensity from the influence of a warmer temperature. This stage is succeeded by the third of authors, the *sweating*. Slight drops of perspiration on the palms, and about the forehead, neck, and chest, increase and extend until very often the bed of the patient is literally wet through. After this, the fever, with all its attendant symptoms, vanishes altogether.

Very often, the paroxysms are accompanied by an inflammation of some viscus. Inflammations of the stomach, liver, and spleen are the most common. But on the cessation of the paroxysm, the inflammatory symptoms are either mitigated or entirely subside. Such inflammations, however, when they exist during the intermission, generally accompany well-established cases. It is hence, perhaps, that we have ultimately the troublesome sequelæ of intermittent fever, in the form of chronic inflammations, indurations, and abdominal dropsy. The stomach and liver are the most liable to chronic inflammation, and the spleen and peritoneum to induration. By far, however, the most common consequence is an enlargement of the spleen, which sometimes attains to an enormous extent. If inflammation must necessarily precede induration, as a rule in morbid physiology, we have not been able to detect it in many instances; but it is not impossible that the inflammation was of such an obscure, subacute character that it eluded notice.

Causes.—From the almost general consent of authors since the times of Lancisi, as well as from our personal observation, we have no doubt that marsh miasm is one of the remote causes, probably the most efficient among them. We are aware that this has been denied by some recent authors, and other causes have been adduced in its place; but, after examining these new views, we can neither concur in the cryptogamous theory, nor in that of the hepatic of summer and pulmonary of winter fevers.

Strictly speaking, there are very few marshes in this country, at least where we have resided or travelled. But in looking for miasmata in places

where intermittents abound, we have never looked for proper marshes. The decomposition of vegetable matter in aqueous collections, other circumstances being favourable, always satisfied us that what is called marsh miasm was the natural product. Thus, Tripoli is surrounded by a large number of gardens, and a considerable river for this country is consumed in watering the summer plants in them. In the process of irrigation, much water accumulates in beds; and necessarily vegetable fermentation and decomposition go on through summer and autumn. Here, we have all the elements of marsh miasm; and when we take into consideration the solar heat, with the humidity which is spontaneously evolved by rich irrigation, we can fully account for the sickly climate of Tripoli during these seasons, and especially for the prevalence of intermittents. Hence it is, also, that those who pass their nights in attending to the plantations, rarely escape the fever, which is generally of the intermittent or remittent types. This, with another fact, namely, the universal precaution, taken by the inhabitants of that city, of shutting the windows by night, to exclude the night air, is strongly corroborative of the observation of many distinguished physicians, who have studied the phenomena of malarious districts, that the baneful influence of marsh miasm is mostly deleterious during the night.

We have many other instances on hand, clearly proving that marsh miasm is an efficient cause of intermittent fever. But as it is not our object to defend this doctrine against those who ridicule it, and the limits of this article do not allow of our fully discussing this interesting part of our subject, we will pass on to mention another cause.

The noxious effluvia generated in filthy towns and cities are another remote cause. That such effluvia are an efficient cause of disease, is universally admitted; but what we would insist on now is, their causative relation to intermittent fever; not merely that they tend to produce this disease, or to provoke it when latent in the system, but that they are a powerful remote cause, and worthy of such a consideration in the etiology of intermittents.

The limits of this article will not allow us to prove this point, either to our own satisfaction or to that of others, who are taken up with the exclusive importance of miasm. We will touch briefly, however, on the subject, by adducing one remarkable instance.

Hasbeyah (where the writer at present resides) is a small town, built very compactly on the declivity of one of the high hills which lie at the foot of Mt. Hermon. The hill faces the north, and close in front of it is another hill, which, by reflecting the rays of the sun, makes the town very warm in summer. The valley is almost perfectly dry during the summer and the autumn, and the inhabitants are supplied with water by small fountains. At some distance from it, and behind a ridge of hills, the River Hasbany, one of the sources of the Jordan, runs southward. The plain of the Hûleh, which lies some twenty-five miles to the north, is very marshy; but this does not seem to influence the town at all, from the fact that the

villages which are situated between it and the marsh are, on the whole, remarkably healthy. Yet, Hasbeyah is a notorious place for intermittents of the most obstinate character which we have ever seen. This strange phenomenon can only be accounted for, in our view, by the extreme filth of the town, which hardly knows any parallel. We will not disgust our readers with the narration of particulars. Suffice it to say that, after long and careful examination, we can assign no adequate cause for the prevalence and obstinacy of the fevers of this place, but its filthy streets, houses, and habits of the people.

Were we to extend the argument to other places, we should find much to support our position. We should have the same support from appealing to the acknowledged predominance of this disease among the poor, and others who are exposed to noxious effluvia, though their locality be entirely free from marsh miasm.

To these causes may be added sudden atmospheric vicissitudes, which prevail to a great extent in some localities of this country during the autumn. It is well known that such sudden changes are a fruitful source of fevers, but we have never had an opportunity to see the operation of this cause when acting alone; and we cannot tell, therefore, how much importance is to be attached to it in producing or promoting intermittents.

The *exciting causes* are errors in diet; over-exertion, corporeal or mental; strong emotions; imprudent exposure, especially at night, &c. &c. But, as it has been philosophically observed, these causes may be exciting or predisposing, according to the order of events.

Treatment.—In *simple* intermittent fever, we have never seen a case that demanded any treatment during the paroxysm. Nature does her work so promptly and effectually, that the interference of art is unnecessary if not injurious.

During the intermission, if the state of the bowels demanded it, we have been in the habit of giving a purgative. But we do not think that the exhibition of purgatives is essential to the efficacy of the quinia, as some suppose. To a large number of our patients no cathartic was given, but the result of the quinia was completely satisfactory. With emetics, as preliminaries, we have no experience; nor do we think they can be needed except in extraordinary cases.

The great antiperiodic remedy, quinia, has never failed, in our hands, to stop the paroxysms. One scruple, taken in two-grain doses, during two intermissions, two-thirds of which was given in the first, and the remaining third in the second, was sufficient in all recent cases. We prefer, however, uniting to the quinia small doses of sulphate of zinc or extract of gentian, as it may be taken in the form of powder or pill. Under such a use of this remedy, we have frequently stopped the coming fit, and invariably the one succeeding it. We have seen the quinia employed in different ways, but our method was so satisfactory that we have never been tempted to change it.

In old cases—of some months' standing—we have found it necessary to give this article in a larger quantity. We have never exceeded, however, a drachm, divided into two-grain doses, and given for some length of time. In such cases, a scruple would be sufficient for stopping the paroxysms; but it is to preclude a relapse that the medicine should be extended for some time. Where quinia had been taken before the patient applied to us, and he had had several relapses, we put a blister to the epigastrium, and gave the quinia largely, and then followed it with tonic or bitter decoctions. In such cases, a course of mercury has been recommended, but we have never had occasion for it. We may say the same of arsenic. One great objection to the use of the last article in this and other diseases, is the carelessness with which medicine is often taken in this country, and the sad consequences of a mistake.

In our present place of residence, we have not been able, after all our efforts, to put every case out of the reach of a relapse. Nor is this to be wondered at, when we consider the continued influence of the remote, and sometimes the exciting cause of this disease. Under these circumstances, change of air seems to be the most hopeful of any treatment.

Occasionally, a little fever, indicated by headache, thirst, frequent pulse, &c. filled the intermissions, and thus contraindicated the use of quinia. To subdue these symptoms, we have found a few leeches applied to the epigastrium, or to any tender spot in the abdomen, with acidulated drinks, low diet, and aperient enemata, quite sufficient. When the symptoms run high, a general bleeding is necessary, followed by the above-mentioned milder means. When a full intermission is produced, the quinia should at once be given.

Chronic inflammations, arising as sequelæ of this disease, we have chiefly treated by leeching and counter-irritation, and with considerable success. We have also used such internal remedies as were indicated by the inflamed viscus. Enlargement and induration of the spleen or peritoneum, when recent, readily gave way to repeated blisters; but in very old cases they are exceedingly obstinate, and in many instances perhaps incurable. Abdominal dropsy, arising from an organic affection of one or more of the abdominal viscera, is a formidable disease; and the most active treatment is sometimes useless. In all these sequelæ, we have seen considerable benefit from a gentle but long-continued course of mercury.

b. Malignant Intermittent Fever.—Under this name authors comprehend all dangerous complications of intermittent fever. Some have classified them under three heads, namely: Cerebral, thoracic, and abdominal. Without questioning the propriety of this classification, our remarks will be confined to the first head, as our experience extends to it only.

We have observed two varieties of cerebral complications, which we may call the *comatose* and the *congestive*. The two cases which we have seen of the former variety were females, and, after a short chill, were characterized by a peculiar coma, very much like that of catalepsy; the face was pallid, and of a marble-like hue, the eyes were closed, the muscles relaxed, and the

intellectual consciousness entirely suspended; but the pulse and natural heat were hardly affected; nor did the face or pupils indicate any active congestion of the brain. Thus, it would seem that the pathology of this comatose state is similar to, if not the same as, the coma of catalepsy and other kindred nervous affections. Both recovered; one after repeated bleedings, and the other readily gave way to assafoetida enemata.

Of the *congestive* variety we have seen three cases. One terminated fatally in less than an hour. This case was also a female. She had had one or two paroxysms of simple intermittent fever, with some symptoms of congestion. On the fatal morning, after the usual chill, she all at once became apoplectic. When called to see her (half an hour after the paroxysm had set in), the following symptoms were observed: Turgescence of the face, stertorous breathing, complete unconsciousness; small, irregular, and very frequent pulse; indications of pain on pressing the epigastrium, and coldness of the extremities. Hot cloths were at once applied to the epigastrium, and to the extremities, and before anything else was resorted to, death terminated the scene.

We took notes of the second case, and they are now presented just as they were then taken:—

July 30th, 10 A. M. Saw ———, who presented the following symptoms: Unconscious, constantly muttering unintelligible words, tonic spasm of the upper extremities, iris sensitive and rather contracted, pulse hard and frequent, moans on pressing the upper part of the abdomen, bowels regular. On inquiry, was told he had these symptoms on the day before in a slight degree, preceded by a chill, and ending with free perspiration on the morning of this day. The symptoms of this paroxysm were also preceded by a chill.

Apply cups to nuchæ, twenty leeches to epigastrium, ice to shaven head, and strong sinapisms to feet. By sunset he perspired freely, and all the morbid symptoms vanished.

31st. By mistake no quinia was given. After a chill, early in the day, all the former symptoms returned.

Apply ice to head, a blister between the shoulders, two on the lower part of the legs, and sinapisms to inner part of the thighs. He began to perspire early, and before sunset the fever abated.

Take at once 3 grs. sulph. quinia, and repeat every hour until three doses have been taken.

August 1. Has had a slight paroxysm late at night, which terminated as usual with free perspiration. Repeat quinia.

4th. No more paroxysms—quite well.

Of the third case, we regret to say that no notes were taken. But we distinctly remember, that the paroxysms followed each other so closely that we had no intermission for administering the quinia; and, in spite of all our efforts to relieve the internal congestion, the patient died. We may remark of this case, by the way, that there seemed to be congestion of the abdomen as well as of the brain and its membranes.

Treatment.—Our experience in this variety of intermittent fever is so

limited, that the few observations which will follow must be rather theoretical. Especially is this the case, as we have not had the privilege of *post-mortem* examination in the fatal cases.

We do not feel sure whether the pathology of the *comatose* variety be a mild congestion of the brain, or whether it be of a purely nervous character. The probability seems to us to be in favour of the last conjecture, but it is not impossible that the other may be true occasionally. Of course, the treatment of such a case will depend on the conclusion we arrive at, from the close study of individual instances. If symptoms of congestion be present, bleeding, general or local, revulsions, &c. will be indicated. But if we have a pallid face, natural state of the pupils, pulse and heat, we should resort to stimulants, irritants, and antispasmodics.

There can be no doubt, to our mind, that the pathology of the *congestive* variety, is a strong congestion of the brain and its membranes, with considerable effusion in fatal cases. The principles of treatment which we entertain have been fully illustrated in the case the notes of which we have before presented. To the means which were then used, we would add, general bleeding in all plethoric subjects, and where the hardness and fulness of the pulse indicated it. We cannot speak too highly of topical bleeding, of leeches behind the ear, or cupping the nuchæ, when the congestion seems to attack the brain principally; but when the epigastrium is tender on pressure, we would by all means apply a few leeches there. Revulsives should not be neglected in any case, after due depletion if necessary.

But, after all, the best service of the medical art in this disease, is to take advantage of the first intermission, and to put the system under the influence of the quinia as soon as possible, because we have found that this variety of intermittent fever does not keep regular hours. A slight degree of fever which may remain during the intermission, should not deter us from the prompt use of the great antiperiodic.

II. *Bilious Remittent Fever*.—By this term we understand a fever, of the remittent type, in which the functions of the liver are deranged to such an extent as to be a characteristic of the disease. We have not yet met a case of the remittent fever of authors, exclusively of the bilious, which we may not rightly include in the synochal fever of this country; because our fevers, of whatever kind they may be, never assume the continued type in their early stages, except in very rare and violent cases.

The period most favourable to the generation of this fever, is the same in which other fevers prevail, namely, summer and autumn.

Symptoms.—It is very rare that the invasion of the actual symptoms is sudden, and without a lengthy warning. Loss of appetite, bitterness of the mouth, a troublesome feeling in the stomach, and general languor, in most cases precede the fever for some time. These are aggravated and then succeeded by flushes of cold and heat alternately, or by a regular chill, after which

fever sets in with all its usual symptoms. This fever, however, is characterized by an irritable stomach, nausea, vomiting of healthy or vitiated bile, bitter mouth, whitish or yellowish tongue, etc. Frequently, there is pain on pressing the epigastrium and right hypochondrium, or it may exist spontaneously, sometimes extending to the right shoulder. The state of the bowels is variable.

The character of the remission is by no means uniform. Sometimes it is incomplete and short; at others, it amounts almost to an intermission, and is quite long. This variation arises from the extent of the perspiration which always precedes, in the way of fair proportion; the more complete the perspiration, the more complete the remission, and *vice versa*.

Causes.—We have not been able to detect any *special* remote cause concerned in this variety of fever. It seems that all the causes which produce intermittents are the same which cause the bilious remittent form. Nor do we know whether there is anything in the nature of these causes productive of modified effects; or whether, as it has been sometimes said, the modification arises from the peculiar condition of individual cases exposed to the essentially same cause. The question in all its particulars can only be solved by a further and more accurate knowledge of the etiology of fevers.

It has been said by men of distinguished learning and experience, that warm climates abound in liver complaints much more than temperate latitudes; and that this organ, when not directly affected, sympathizes in a large number of their acute diseases. Is *heat*, then, the modifying agent of malaria in the production of bilious remittent fever? It may be; for, in several instances which fell under our observation, it was evident that too much exposure to the rays of the sun had a great share in bringing on the disease.

To the exciting causes which were mentioned in a former part of this article, we may add exposure to the influence of solar heat, and of cold and damp nights, washing with cold water during a general perspiration, or otherwise checking the cutaneous secretion.

Treatment.—During the early stages of this fever, a general bloodletting is the principal means for fulfilling the first indication, namely, to procure a full intermission. After a moderate bleeding, the symptoms often give way to a general and free perspiration. A second is occasionally required by the return of all the former symptoms. Of course, a due regard should be had to the pulse in all cases, but it is not to be implicitly followed; because, in this, as in other kinds of fever, it is not always uniform. More consideration should be given to the symptoms, circumstances, and particular contingencies of the case. But to produce such a favourable crisis by general bloodletting, it should be restricted commonly to the first few days of the fever.

In very mild cases, or where venesection is contra-indicated, topical bleeding by leeches from the epigastric and hepatic regions will be sufficient. Often, however, this will have to be repeated before we can obtain a full intermission. But topical bleeding is not confined to these mild cases; it serves

a most important service where general bloodletting is demanded, and after it has been performed. When this operation has not subdued the fever or the gastric irritability, we have often seen the application of twenty leeches at once produce the desired result.

The state of the bowels is not to be neglected. When they are costive, they should be gently evacuated by emollient or aperient enemata. Of the former, we have been in the habit of prescribing a decoction of malva with a little common oil and salt; and it is very seldom that one or two such enemata do not bring away a large quantity of fecal matter. If, however, these do not operate, or a stronger action is desired, instead of common salt we have put in the decoction an ounce or two of Epsom salts—but always with the precaution of mixing it in half the usual quantity of common clyster, lest the whole be ejected before the salts shall have operated. We have found this way of administering salts a good substitute for the use of purgatives by the mouth. By sad experience we have learned that purgatives are quite inadmissible in all our fevers, with the exception, perhaps, of a few cases. When the stomach does not reject them, they almost invariably increase the gastric irritability, and with it the fever. During convalescence, however, a slight headache will often give way to a dose of castor oil, which we have found to be the least irritating of that class of medicines.

In all cases where the gastric irritability was not very great, we have used small doses of calomel and ipecac. as an alterative and diaphoretic; but we have never pushed the calomel so far as to produce ptyalism. A gentle and continued diaphoresis was the result of this combination generally, which did a great deal towards subduing the febrile symptoms.

As long as the patient is feverish, we always direct him to drink some *ptisan* instead of common water. If the tongue be very dry, we recommend some mucilaginous drink with a little ice in it; but when it is moist, we have seen greater benefit from the use of iced acidulated drinks. Infusion of tamarinds may be allowed if grateful to the patient, but when the stomach is very much irritated, it should be very weak.

Under these means, a full intermission is generally produced. If the symptoms show any tendency to return, the quinia should be given, but we have not found it necessary in many instances.

This, in brief, is the treatment we have used in those cases which it was our lot to meet. We have not seen the severe or fatal cases, which are said to be accompanied with cerebral complications, and which undoubtedly require more energetic treatment.

III. *Synochal Fever*.—Under this term we comprehend most of the varieties of continued fever, as the synocha, synochus, and typhus of authors. The error, if it be one, of reducing these varieties into one head, has arisen from the repeated observation that their diagnostical symptoms do not appear either in the initial or middle stages of fever, and their appearance in the

last leads us to suspect that they are but various modes in which one disease terminates.

It may be a matter of surprise to a great many that we do not propose to consider typhus as a peculiar and distinct variety of continued fever. The fact is, we have never seen a pure case of this kind, characterized from the beginning by typhoid symptoms. We have seen many cases of synochal fever *terminate* in the worst symptoms of typhus, but we do not remember one which began in this way. Others, however, practising in this country, have told us that they have met it occasionally in its purest form. It is not impossible that, when it prevails, it may be epidemical.

Another variety of fever is also included here, which others may suppose demands a separate and distinct consideration. We allude to the remittent fever, which is not of a bilious nature. The reason why this is included is, that our synochal fever never assumes the continued type at once, but continues to be in some sort a remittent until a considerable time has elapsed from its invasion. There are exceptions to this statement, but they are rare, and cannot claim more consideration than what is due to exceptions in general.

Symptoms.—Like the bilious remittent, it is very rare that synochal fever sets in at once. Most commonly, the premonitory symptoms are protracted for some days; and it is a question, not altogether unimportant, whether these symptoms form a part in the chain of morbid phenomena produced by the febrile cause, or whether they should be considered as abnormal deviations acting as predisposing causes. Be this as it may, the patient feels unwell for a day or two, or more, before all the essential elements of fever appear. During the day, lassitude, yawning, fulness of the head, loss of appetite, bad taste in the mouth, &c., trouble the patient; and, in the night, restlessness, feverishness, and sometimes vomiting take place. These, with a general or epigastric uneasiness, and a feeling of soreness in the limbs, constitute the chief premonitory symptoms.

Some time or other, generally in the day, these symptoms are succeeded by a regular chill, or by slight chilliness alternating with flushes of heat, and terminating, after various degrees of length, in the actual symptoms of fever. The pulse becomes hard and frequent, sometimes full; but, in some cases, by constitution, or some other contingency, it is small. The face is flushed, the temporal arteries throb, the eyes often suffused, and the head heavy or painful. The tongue assumes various aspects; sometimes it is red, and dry, and rough; sometimes it is coated with a dirty layer of mucus, except the edges, which are red; and sometimes it is moist and almost natural. But, however the state of the tongue may be, the stomach is almost invariably irritated, as indicated by the intense thirst, tenderness on pressure, and vomiting, which are present more or less in every case. The bowels may or may not be costive, but the former state generally prevails. The urine is high coloured and sedimentitious. The skin is dry and hot, but it is very rare to

meet with the *calor mordax* of writers in the early stages. With these symptoms, there are restlessness, pain in the limbs—especially in the loins, shoulders, and knees—general or præcordial anxiety, &c.

After continuing some hours, generally somewhere between six and twenty, the urgent symptoms give way to a gentle perspiration; but, while there is an abatement of the fever, it by no means goes off entirely. The remaining febrile action may be distinctly observed in the moderate frequency of the pulse, the clammy state of the tongue, the continued, though abated thirst; in a word, we see a full *remission* of the books. The remission generally continues more or less, according to the degree of perspiration which preceded it. The extent of the perspiration is commonly regulated by the urgency of the symptoms. Sometimes, however, we see a full intermission, which either puts a stop to the fever permanently, or it may be succeeded by another paroxysm, which assumes the remittent type.

The remission is succeeded by a renewal of all the former symptoms, and they by a remission, and so on. We may remark respecting these remissions, that, as the case goes on favourably or unfavourably, they will be longer and more frequent, or the contrary. If the case terminates favourably, the remissions will become more marked as they succeed every following paroxysm, until a full intermission, or permanent stop of the fever, is produced. And, on the other hand, if it goes on unfavourably, the remissions will become feebler and feebler, until the fever becomes confirmed in the continued type.

When the case terminates fatally, the patient becomes very restless, the pulse small and irregular, the tongue brown or blackish, and very dry, the functions of the brain are disturbed, and the muttering delirium and subsultus of typhus set in. These symptoms become worse, and death, by coma or a half comatose state, terminates the scene.

Causes.—All the causes which produce intermittents and remittents are capable of producing this variety of fever. In malarious districts, synochal fever is a very common disease; and, in such as are remarkably so, it assumes a very dangerous form, which is often fatal to those who have not been acclimated to noxious effluvia. In thickly-populated cities and towns, which happen to be comparatively free from marsh miasm and filthy effluvia, it seems that the impure atmosphere of streets swarming with animal life, and badly-ventilated, either from the closeness of the buildings, or from a want of strong currents of wind, has no small influence in producing the synochal fever of these localities. We may add another, namely: the action of solar heat which is called *insolation*, or *stroke of the sun*. Nor is this to be wondered at, since our summer heat is very great, ranging from 75° to 95° Fahr., and that in the shade, and for six months in the year. This, with the very imperfect provision which the Arab dress makes for protecting the head, renders such as are exposed very liable to insolation and fever. Especially is this true of children, whose peculiar state of nervous organs makes them very susceptible

to such influences, and who are, nevertheless, allowed very frequently to roam in the sun.

Treatment.—General bloodletting, the utility and safety of which in fever are so much questioned in other countries, stands foremost among the beneficial and safe remedies which we have observed and tried in almost innumerable instances. And this is the testimony not only of those who have visited warm climates, but it seems to be also the opinion of all those who have expressed their judgment *à priori*. But, while its utility has so much authority, no one can doubt that it may be abused, and thus may be productive of very serious consequences.

Very often, not long after the actual invasion of the febrile symptoms, nature relieves the patient by a full perspiration, and, as human sagacity cannot foresee when such a favourable turn will take place, and when not, we have generally left the case, for the first few hours, to nature, unless its violence called at once for prompt and vigorous measures. When the desired result did not come on after the lapse of twelve hours or more, according to the urgency of the symptoms, we have had the patient bled in the sitting posture to *syncope*, or until a full inspiration could be produced with perfect ease. The result will be, almost invariably, a sensible mitigation of all the symptoms,*and, not unfrequently, a free and critical perspiration. When this latter takes place, and the febrile symptoms are completely subdued, the only sure way of preventing a return of all the former symptoms, is the prompt administration of quinia. When the symptoms are simply mitigated, very commonly they soon run high again, and a second bleeding will be frequently necessary. There are very few cases which cannot bear this repetition, or which will not be permanently benefited by it. A third bleeding is sometimes demanded, but great caution will be necessary before deciding upon having it performed. Of course, the sex, age, constitution, pulse, &c., should be considered in all cases where bleeding is proposed, but in third bleedings doubly so.

But bleeding should be limited to the first few days of the disease, not only because it is in the early periods that the fever is very high, but also because the system is exhausted during the middle and last stages of fever, and, therefore, cannot bear the loss of blood. Cases have occurred under our observation where an ill-timed bleeding has been fatal, or, at least, has hurried the fatal termination.

When general bloodletting has only mitigated the febrile symptoms, or when they were slight from the beginning, and a bleeding is deemed unnecessary, we have seen great benefit from the application of leeches to the abdomen. We have been astonished, sometimes, by the sudden relief which was experienced by topical bleeding; and we can remember many critical cases which recovered mainly by this means. The leeches should be applied to that part of the abdomen which feels tender on pressure. Sometimes there is no tenderness at all, but the red tongue, the thirst, and the vomiting have

directed us to apply the leeches to the epigastrium, and with the most gratifying result.

If general bloodletting has not been carried to a great extent, topical bleeding may be repeated several times, until the fever is subdued, or until no more blood can be drawn with safety to the patient. We have observed that, when a sufficient quantity of blood has been lost, and the symptoms remained unabated, the case generally terminated fatally.

But, while we depend on bloodletting in the early stages of synochal fever, as the principal and most potent means for subduing it, we do not neglect the use of other means, very important in their way. Of these, we have much faith in suitable or medicated drinks, and laxative enemata.

If the thirst be great, and the tongue not dry, we have found cold and slightly-acidulated drinks, not only very agreeable to the patient, but also of marked benefit. Lemon juice, tartaric acid, and tamarinds furnish materials for such drinks, among which the taste of the patient may be consulted. We frequently add a small quantity of the sweet spirits of nitre, and a favourite prescription of ours in such cases is the following:—

Acid. tartaric. ʒj; sacchar. alb. ʒj; aquæ fontanæ lbiss. Solve et adde, spt. æther. nitros. ʒij. A small portion to be taken every now and then.

But, when the tongue is dry, and its papillæ rough and red or brownish, we have observed mucilaginous drinks to be much more apt to allay the thirst and moisten the mouth. Quince-seed tea, or barley-water serves the purpose. Sometimes we have united acidulated with mucilaginous drinks, and, perhaps, not without benefit. When ice is to be had, we always allow the patient to take it *ad libitum*, but continuedly, so as not to suffer a reaction to take place; but, during perspiration, or when the chest is affected, we prohibit its use. After all, nothing will quench the thirst so readily and permanently as the application of a few leeches to the epigastric region.

We have always inquired after the state of the bowels; and, when they were confined, an aperient enema was directed, which rarely fails of exciting a moderate evacuation. If the bowels had been long inactive, or when the first clyster was not active enough, it was repeated once or twice every day. If a stronger action is desired, one ounce or more of Epsom salts may be dissolved in half the quantity of a common clyster, and then administered. If there was diarrhœa, we have usually ordered emollient or mucilaginous enemata, according to the frequency and character of the discharges. When it is accompanied by pain, we add a small quantity of laudanum.

It may surprise some of our readers that we do not employ more energetic measures for evacuating the intestines of what is considered by some as a "morbific cause." We are fully aware that "active aperients" are the *sine quâ non* of many highly respectable authors and practitioners; but we must say, with all deference to their views, that our *fevers cannot bear them*. The irritation or inflammation of the gastro-intestinal mucous membrane, which seems always to accompany our fevers, whether it be secondary

or primary in the chain of febrile phenomena, cannot fail to be aggravated by purgatives or any other class of medicines which is prohibited in gastro-enteritis, and, in its turn, aggravate the fever. However orthodox the use of calomel and jalap may be, in my hands, it has rarely failed to make much mischief in this disease. "We believe," says a distinguished author, "that the disciples of Broussais may have carried the antiphlogistic plan too far in fever; but, if they have killed their thousands, the followers of Brown and Hamilton have killed their ten thousands. . . . What is the common treatment of fever? A bottle of wine on the one hand, and a bottle of purging medicine on the other; and this for all fevers and all stages of the fever! We do not wish to be understood as decrying the use of tonics or purgatives in all cases, but we do protest, in the name of common sense and humanity, against their indiscriminate employment. *The experience derived from the treatment of several thousand cases of fever has convinced us of this fact: that in the treatment of this disease, particularly in its early periods, we shall be more certain of advantage from leeching the abdomen, cold drinks, and emollient enemata, than any other treatment whatsoever.*" (*Cyclopædia of Practical Medicine*, Amer. edition, vol. ii. p. 323.)

We may say the same thing respecting the use of tartar emetic as a sedative in fevers; for the same principle that forbids the use of purgatives, forbids it also. We have used it in one case, and seen it used in two, and the result in the three cases was manifestly injurious: a morbid and obstinate diarrhœa had wellnigh destroyed the life of the three patients. We will not pretend to say that this is competent experience to exclude this article entirely from the list of febrifuge medicines; but, as long as we have reason to remain attached to our idea of the pathology of our fevers, and as long as we remember the result which we have seen from its use, we shall let it alone, and recommend to others, who are practising in this country, to do the same.

To encourage perspiration, we are in the habit of giving small doses of ipecac. and sweet spts. of nitre, and, perhaps, with advantage. When the stomach and intestines did not seem to be much inflamed, we have united to the ipecac. small doses of calomel. A gentle and continued diaphoresis is generally the result. Another expedient which we are in the habit of using is strongly-sinapised pediluvia. By the gentle stimulation which they seem to exercise on the cutaneous vessels, they are sometimes followed by a critical perspiration. Nor is this their only use; for, by determining the blood to the lower extremities, they generally relieve, for a time, headaches and other local pains and congestions. But we have always been careful not to use them when the febrile excitement was high.

Instead of cold affusion and sponging—which have been so much recommended by British physicians, but which the prejudices of the natives will not permit—we have found cooling applications to the abdomen, when it is preternaturally hot, of some service, especially in children. Cold poultices of starch and vinegar, or cloths dipped in diluted vinegar, renewed often, is the

way in which we commonly order them. In the state of perspiration, or when the temperature of the body is felt by the patient to be lower than the natural range, or when there is pulmonary congestion, we always refrain from using them. Under such contingencies, we would rather use warm or tepid emollient poultices applied to the whole abdomen.

Sometimes, the fever becomes chronic, as it were; that is, it drags on for a long time very tediously and obstinately, without coming, or tending to come, to any termination. Very often, in such cases, no local inflammation can be detected, and all the usual means have been used without much advantage. We have employed, in a few cases of this kind, the following formula, and, as far as we remember, always with benefit:—

Pulv. digitalis, pulv. ipecac. āā gr. j; pulv. antimonialis gr. ij. To be repeated every four or six hours, until the digitalis shall have produced an impression on the head or pulse.

When typhoid symptoms set in, which happens only in the worst cases, we still continue the antiphlogistic plan; confining ourselves, however, to the mildest measures. In such cases, we very rarely abstract blood, even topically, but our reliance is chiefly upon cooling mucilaginous drinks. At the same time, we use revulsives to a considerable extent; blisters are applied to the extremities, and sometimes, when the brain is affected, to the nuchæ or scalp. We have never ventured to use internal stimulants, except in the worst cases, and, even then, chicken broth is all that we dared to administer. It seems to us that the high degree of atmospheric heat, and the extensively-injected state of the mucous membrane of the alimentary canal, make the use of wines and medicinal stimulants rather imprudent and dangerous. Under the plan which we have hitherto pursued, we have sometimes seen surprising recoveries, quite unexpected either by ourselves or by the friends of the patient.

ART. VI.—*On certain Dumb-bell forms of Crystals found in the Urine.*

By WILLIAM A. HAMMOND, M. D., Assistant Surgeon U. S. Army. (With a wood-cut.)

THE question of the chemical character of the dumb-bell crystals found in the urine, has for some time been a subject of controversy amongst those who have devoted themselves to the microscopical and chemical investigation of this secretion. It was at one time supposed by Dr. Golding Bird, who first directed the attention of the profession to these peculiar formations, that they were a variety of *oxalate* of lime. Dr. Bird has, however, in an article in the *London Medical Gazette*, vol. xi. 1850, p. 700, and in the last edition of his work on *Urinary Deposits*, abandoned his first opinion, and now regards them as *oxalurate* of lime; whilst Dr. Frick, of Baltimore, in the *American*